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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/580,100
Filing Date: May 19, 2006
Appellant(s): WAKI ET AL.

HITACHI MEDICAL CORPORATION
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/17/2011 appealing from the Office action mailed 01/20/2011.

(1) Real Party in interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 2004/0234113

MIGA

11-2004

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 9 and 14 are rejected under 35 U.S.C. 102(a) as being anticipated by Lin (US 6,068,597).

3. Addressing claims 1, 9 and 14 Lin discloses an ultrasonic imaging apparatus comprising: an ultrasonic probe that receives and sends ultrasonic waves from/to an object (see Fig. 1, element 114, the ultrasound transducer); ultrasound image structuring unit configured to generate an ultrasound image on the basis of a reflected echo signal received by the ultrasonic probe (see Fig. 1, elements 136, 134, 132, 130, these processors and scan converter receive echo signal and generate images); an elastic image structuring unit configured to obtain a strain or an elastic

modulus of the elasticity of the object of a region corresponding to the ultrasound image on the basis of the reflected echo signal and generates a color elastic image (see col. 2, lines 40-49, col. 3, lines 13-43, Fig. 1, elements 136, 134, 132, 130, these processors and scan converter receive echo signal and generate elastic color images); a display configured to overlay the ultrasound image to the color elastic image, or arranges the ultrasound image and the color elastic image and displays the resultant image on a screen (see col. 2, line 9-col. 3, line 43, the color elastic is overlaid the black and white image in order to differentiate tumors in soft organs such as the breast, prostate and liver); a setting unit configured to variably set a corresponding relationship between a hue of the color elastic image displayed on the screen and the level of the strain or elastic modulus (see col. 7, lines 47-col. 8, lines 11, claim 4, adjust color window to create accurate color image that enable viewer to differentiate tumor from soft tissue); a calculator configured to calculate an amount the strain or elastic modulus of the elasticity of the object of a region corresponding to the ultrasound image on the basis of the reflected echo signal (see col. 2, line 10-col. 3, line 43, the Doppler spectrometer provide information on elasticity which is the same as calculating the strain or elastic modulus); a color conversion table that is rewritable and set a relationship between the level of the strain or elastic modulus and the color of the color elastic image (see col. 8, lines 1-11, col. 9, lines 8-49, color mapping, look-up table are part of the color conversion table). A color image generator configured to read the color corresponding to the obtained strain or elastic modulus from the conversion table and generates a color elastic image indicating the distribution of the strain or elastic modulus (see Fig. 8, elements 136, 138, col. 8, lines 1-11 and col. 9, lines 8-49, elements 136 and 138 have look-up table, color mapper, pixel encoder/interpolator and color frame buffer to create color elastic image); the color elastic

image is displayed with a hue for a larger region or a smaller region in the strain or the elastic modulus than a preset amount of the strain or the elastic modulus (see col. 2, line 50-col. 3, line 10 and col. 4, line 14-18; elastic color image is based on the amplitude signal; examiner interprets the claim as color elastic image base on the measurement of strain or elastic modulus from the ultrasound signals). The system is capable of assigning the hue of the color elastic image so as to prevent the display from displaying a neutral portion in a color conversion table (see col. 9, lines 8-49 and Fig. 11; the operator could set the color mapping scheme; examiner interprets the claim according to applicant's specification paragraph [0059] and Fig. 7, the neutral region 33 between regions 31 and 32 is set to RBG/000 which is black; the operator is capable of setting the boundary region between two regions to be black).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-5, 7-8 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (US 6,068,597) and in view of Miga (US 2004/0234113).

6. Addressing claims 2-5, 7-8 and 10, Lin does not disclose an ultrasonic imaging apparatus that display on the screen with a color bar for a corresponding relationship between the hue of the color elastic image and the level of the strain or the elastic modulus. Miga discloses: an ultrasonic imaging apparatus that display on the screen with a color bar for a corresponding relationship between the hue of the color elastic image and the level of the strain and elastic modulus (see Fig. 2C, 3, 9D and 11). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Lin's apparatus to display on the screen with a color bar taught by Miga because the color bar provide a visual corresponding relationship between the hue of the color elastic image and the level of a physical quantity.

7. Addressing claims 11-13, Lin discloses an ultrasonic imaging apparatus comprising: the strain or an elastic modulus calculated from the amount of motion of the tissue (see col. 2, line 10-col. 3, line 43, Fig. 4, col. 4, lines 52-67, vibrational color Doppler technique determine the strain or elastic modulus of the tissue from the amount of motion of the tissue cause by the vibration). Miga discloses a color bar indicating a correspondence between the hue of the color elastic image and the strain or the elastic modulus (see Figs. 2C, 3 and 9D); a character indicating the assignment of the hardness of the color elastic image is displayed around the color bar (see Fig. 2C, the number next to color bar); wherein the color elastic image is displayed alternatively a larger region or a smaller region than the setting strain or elastic modulus with a set hue (Figs. 2C, 3, 9D and 11, in the figures there are larger and smaller region with different color hue).

(10) Response to Argument

Appellant argues on page 7 of the brief regarding claim 1 that Lin does not obtain a strain or an elastic modulus of the elasticity of the object of a region corresponding to the ultrasound image. Appellant's argument is not persuasive as shown in the following: Lin discloses an image is created from ultrasound waves and the vibrational spectrum obtained from such image and associated ultrasound waves show the strain or elastic modulus (see col. 2, line 50-col. 3, line 40 and col. 5, lines 17-42).

Appellant argues on pages 7 and 9 of the brief regarding claim 1 that Lin does not disclose a color elastic image is generated base on the strain or elastic modulus; measurement of the strain and elastic modulus of tissue in the region of interest and displaying a color image visually illustrating a relationship between such measurements and the hue of the color. Appellant's argument is not persuasive because Lin discloses that the vibrational resonance spectrum values are mapped into different colors based on strain measurement in which the vibrational resonance spectrum indicates strain and each color is associated or indicates a relationship with the different strain level – i.e., vibrational resonance spectrum is the color elastic image (see claim 4, col. 2, line 50-col. 3, line 40 and col. 5, lines 17-42).

Appellant argues on pages 7-8 of the brief regarding claim 1 that Lin does not disclose a color elastic image which is displayed with a the hue for a larger region or a smaller region in the strain or the elastic modulus than a preset amount of the strain or the elastic modulus. Appellant argues on page 8 Lin's teaching is different from appellant's invention as shown in Fig. 6. Appellant's argument is not persuasive because Lin discloses color elastic image which is

displayed with the hue for a larger region in which the vibrational resonance spectrum is the color elastic image that includes displayed color for each pixels and region – i.e., Lin assigns a hue value to the respective regions. (see claim 4, col. 2, line 50-col. 3, line 40 and col. 5, lines 17-42). It is noted that appellant used the alternative “or” in the claim which would require only one of the alternative limitations to be met. Furthermore, the arguments related to Fig. 6 cannot enforce examiner to read limitations from the figure into the claim.

Appellant argues on page 9 of the brief regarding claim 1 that Lin does not disclose using the strain or elastic modulus as a parameter for generating the ultrasound image and excluding any unnecessary regions from the image. It is not apparent where this limitation is being claimed.

Appellant argues on pages 11-12 of the brief regarding claim 14 that Lin does not disclose assigning the hue of the color elastic image so that the display is prevented from displaying a neutral portion in a color conversion table. Appellant argues examiner misinterprets both the claim and the reference because the invention does not assign a color of black to any specific region and Lin does not set a specific region to black. Appellant’s argument is not persuasive because examiner interprets the claim according to specification paragraph [0059] and Fig. 7. It can be seen that neutral region 33 is assigned the RBG hue of 000 which is black. Therefore, examiner interprets the claim as having the setting unit assigning the color of black to the neutral region. Accordingly, Lin does disclose a color mapper and look-up table that assigns any color to an image (see Figs. 7-8, 11, col. 7, line 47-col. 8, line 11 and claim 4).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/HIEN NGUYEN/

Examiner, Art Unit 3777

Conferees:

/Tse Chen/
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